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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,651	03/10/2004	Miao Zhu	10030988-1	4197

7590 09/08/2006

AGILENT TECHNOLOGIES, INC.
Intellectual Property Administration
Legal Department, DL 419
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Loveland, CO 80537-0599

EXAMINER

SINES, BRIAN J

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/797,651

Applicant(s)

ZHU, MIAO

Examiner

Brian J. Sines

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/19/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 19-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 22-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

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DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

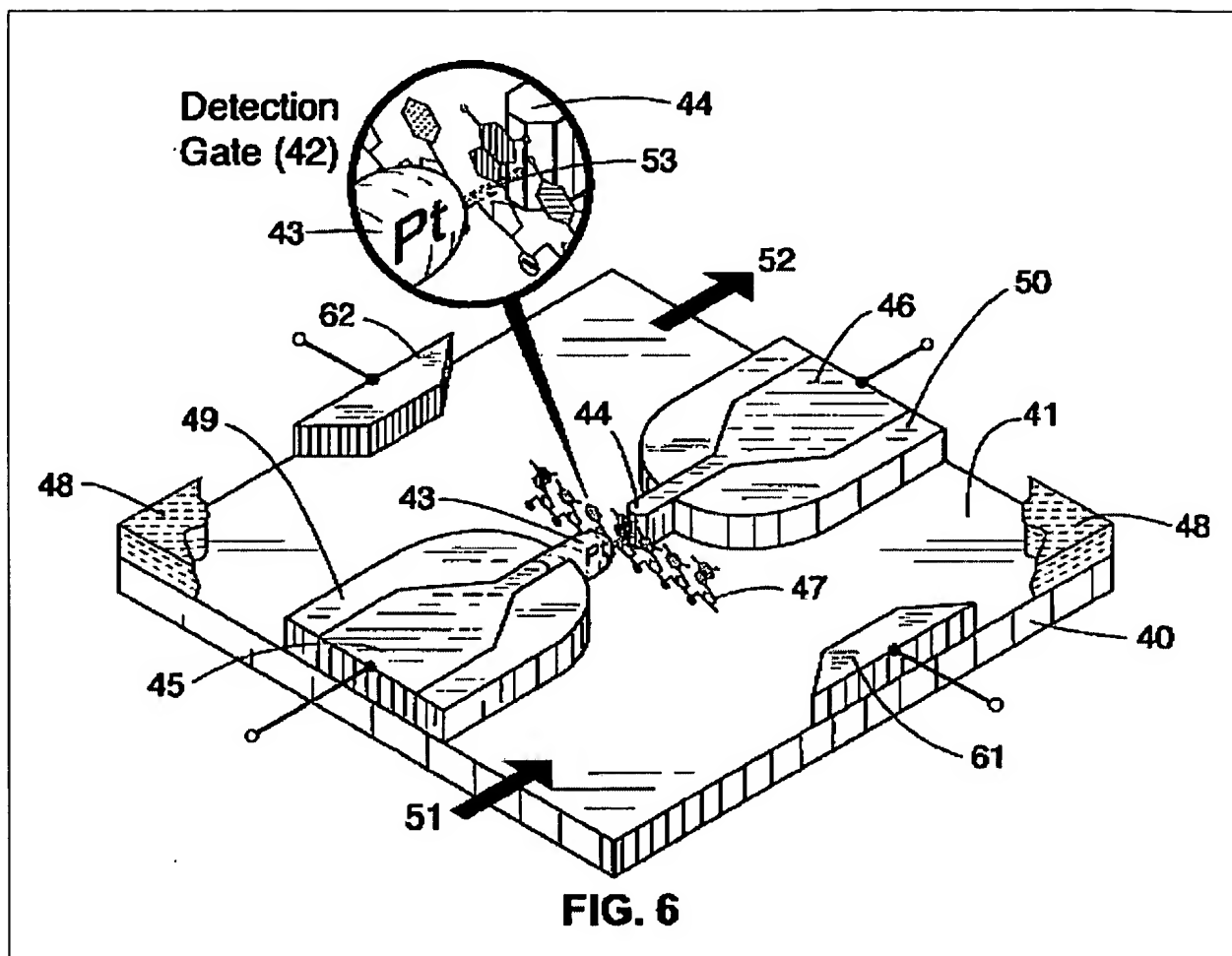
Claims 1 – 18 and 22 – 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (U.S. Pat. No. 6,905,586 B2) (hereinafter “Lee”) in view of Flory (U.S. Pat. No. 2004/0144658) (hereinafter “Flory”).

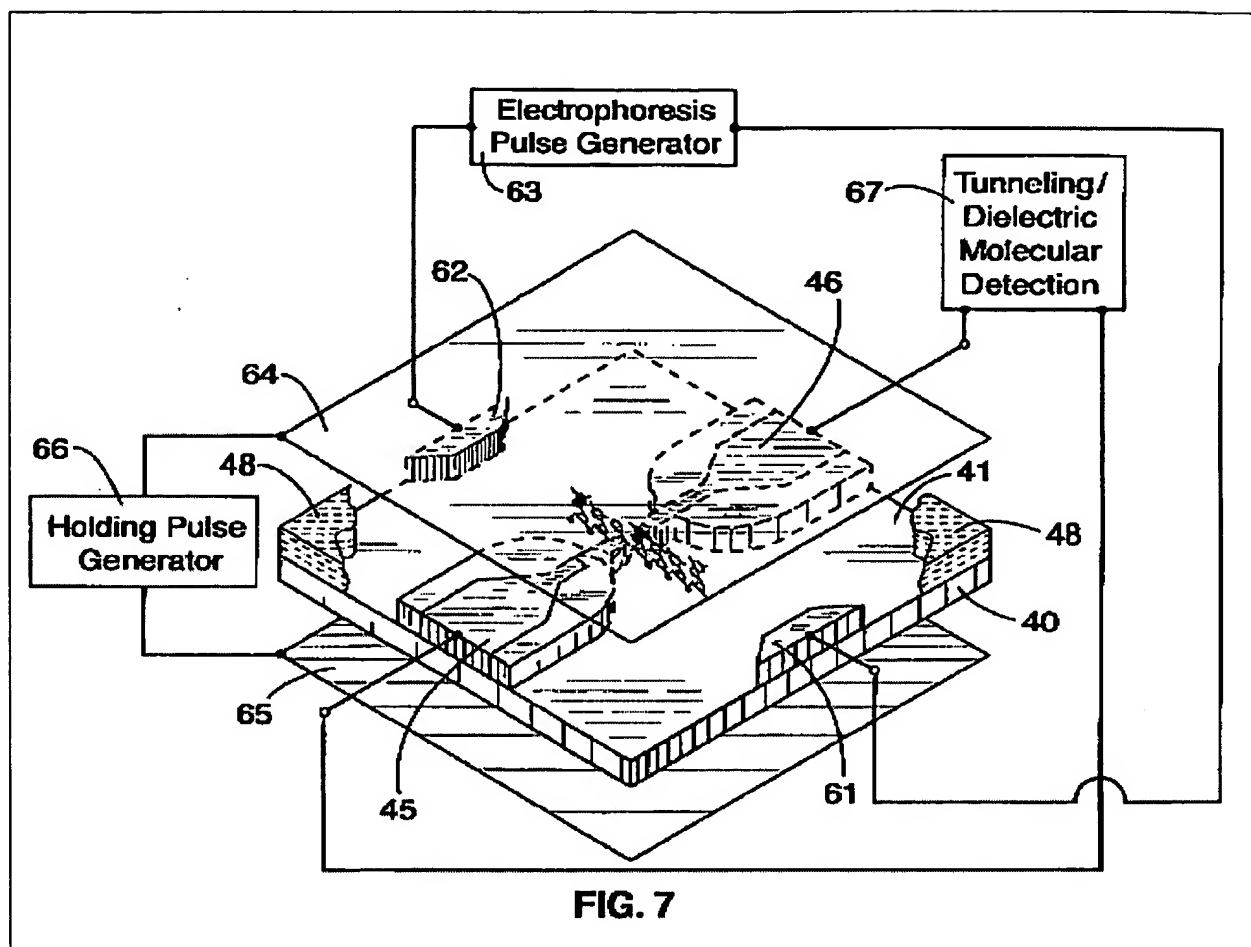
Regarding claims 1 – 18 and 22 – 34, Lee teaches an apparatus and methodology for sequencing polymer molecules, such as for performing DNA and/or RNA sequencing using nanoelectrode-gated tunneling current measurements. Lee teaches an apparatus comprising: a pair of detection nanoelectrodes (45 & 46); tunneling/dielectric molecular detection system (67); electrophoresis means (63) (see col. 7, line 30 – col. 14, line 4; figures 6 and 7). Lee does teach the use of tunneling current for each DNA nucleotide base passing through the detection gate in order to sequence DNA molecules (see, e.g., col. 9, line 26 – col. 10, line 67). Lee does teach the

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use of a tunneling biased voltage (see, e.g., col. 8, lines 13 – 25). Lee does not specifically teach implementing a fixed bias voltage across the pair of nanoelectrodes, wherein the bias voltage corresponds to an energy difference between any two internal energy levels of a molecule of interest.

Flory teaches an apparatus and method for biopolymer identification during translocation through a nanopore using a biasing voltage potential (see, e.g., paragraph 33). Flory teaches a similar device structure comprising: a pair of electrodes (7 & 9) encircling a nanopore (3); and a signal detection means and signal generator (11) for detecting and sequencing a biopolymer (5) (see, e.g., paragraphs 36 – 45; figures 1A – 3B). Flory teaches the modulating or changing of a bias voltage during operation (see, e.g., paragraphs 33 and 34). The use of a modulation waveform is well known in the art as a technique for modulating voltage. Flory teaches the use of a comparison database for sequence determination (see paragraph 61). Flory teaches the scanning of the energy level structure of each monomer as it translocates the pore (see paragraph 47). Flory teaches the implementation of resonant tunneling (see, e.g., paragraphs 26 and 47 – 62). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate the use of an initial fixed and a subsequently modulated bias voltage with the disclosed system and apparatus as claimed.





Response to Arguments

Applicant's arguments with respect to the present claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Sines whose telephone number is (571) 272-1263. The examiner can normally be reached on Monday - Friday (11 AM - 8 PM EST).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Brian Kim". The signature is written in a cursive style with a large, looping initial "B" and a long, sweeping underline.